

Natural Disturbance in Alaska: Implications for Wildfire and Property Values on the Kenai Peninsula



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Caribou Hills Fire:



2007
Approximately 55,000 Acres
Burned around 200 structures

<http://www2.borough.kenai.ak.us/emergency/Fire/2007/CH/Caribou%20Hills%20Fire%202007/album/slides/Picture11.html>

Shanta Creek Fire:



2009

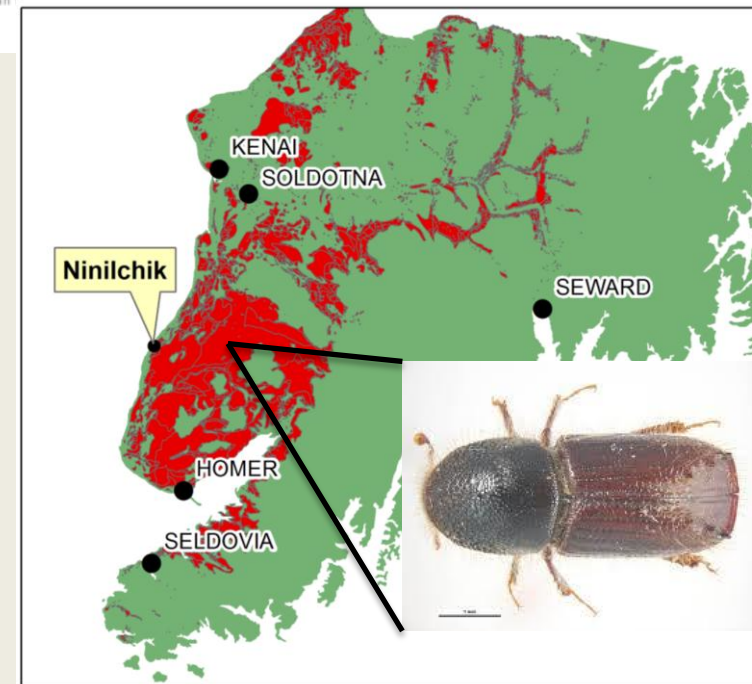
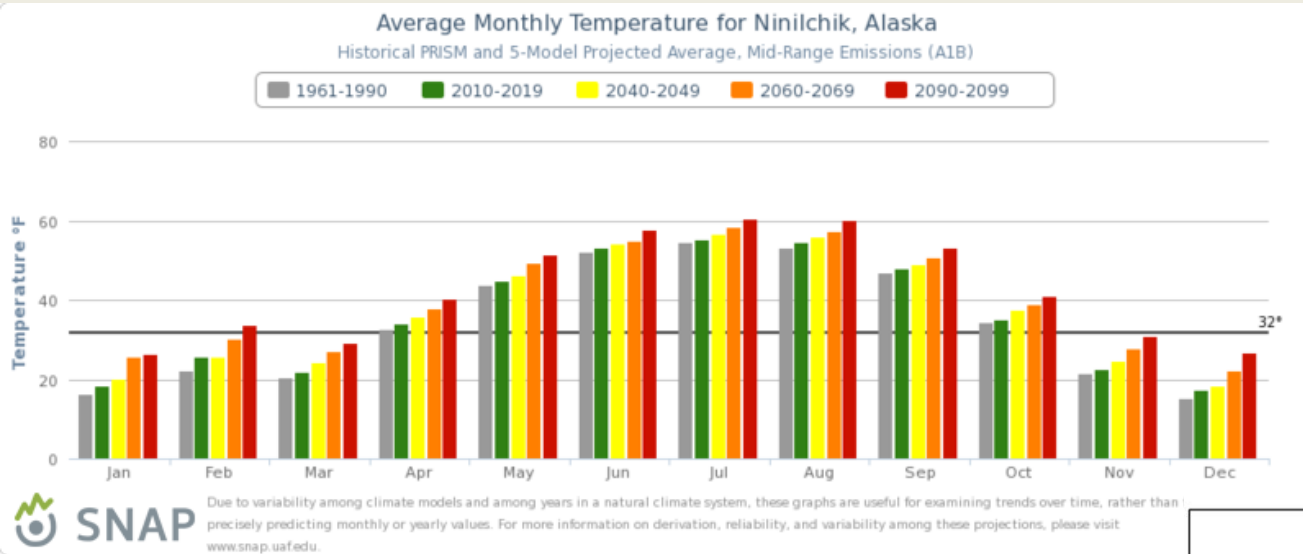
**Approximately 13,000 Acres
Threatened structures**

<http://www.wfblogs.org/climate/content/wildfire-outlook-May2010>





SBB Outbreak and Changing Climate



Questions

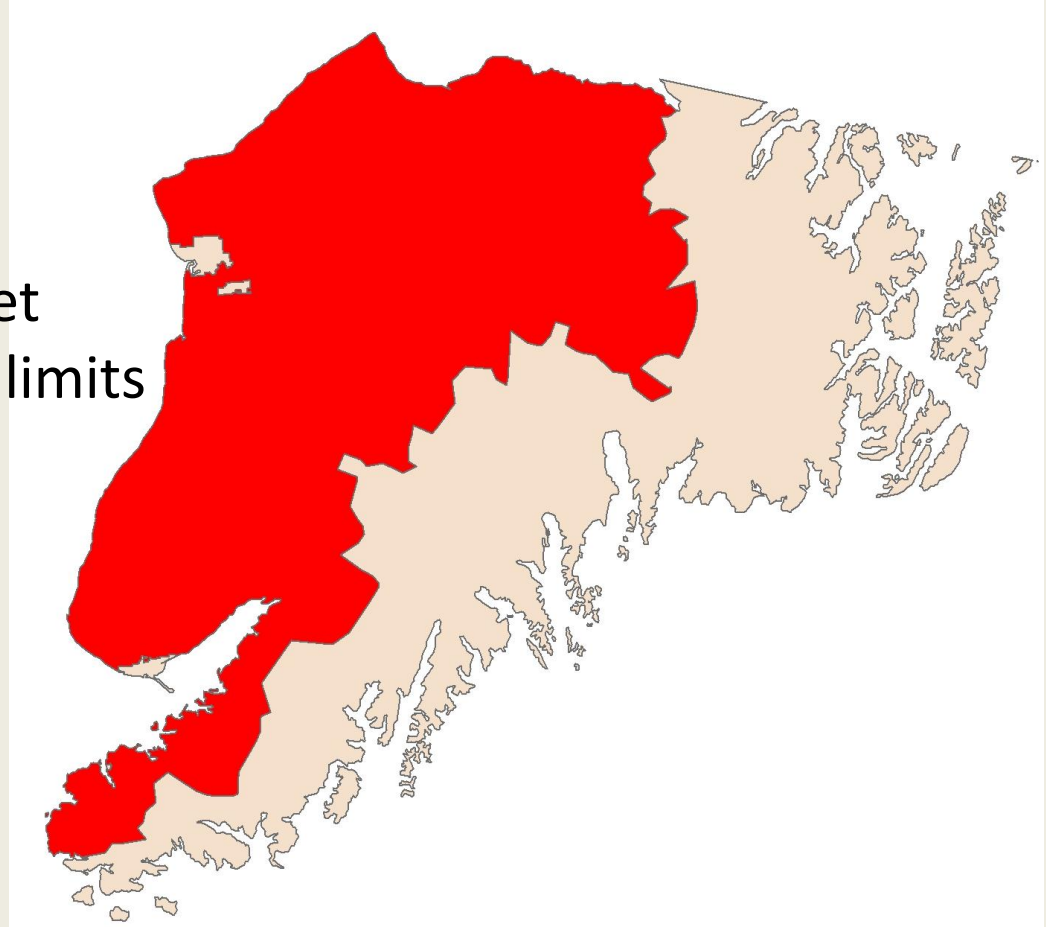
1. Has the 1990's SBB outbreak altered the probability fire occurrence between 2001 and 2009?
 - A. Occurrence of large fires (>500 hectares)
 - B. Location of small fires (<500 hectares)

2. Has the outbreak and wildfire affected property values in the wildland urban interface?

Study Site

Question 1: SBB and Wildfire

- The western Kenai Peninsula
 - Water flows into Cook Inlet
 - Exclude incorporated city limits



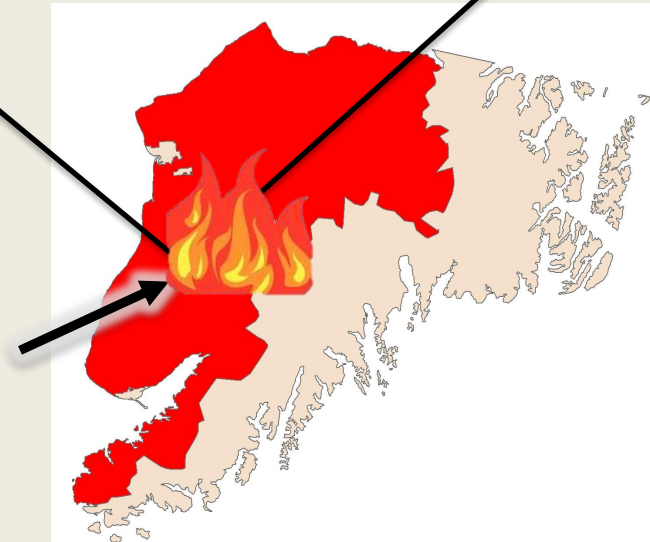
Methods

Question 1: SBB and Wildfire

- Datasets
 - **Fire:** Alaska Fire Services Large Fire Database fire perimeters and fire locations database.
 - **SBB outbreaks:** US Forest Services Alaska Forest Health Survey.
 - **Vegetation:** National Land Cover Database 2001
 - **Climate:** SNAP downscaled gridded climate data.
 - Variety of other data sources.






Analysis

- Probability of a wildfire burning in a given 1x1 km pixel between 2001 and 2009:
 - 1990's SBB outbreak
 - Recent past fire (1941-2000)
 - Vegetation type
 - Canopy cover
 - Aspect
 - Distance from road
 - Potential Aridity (dryness)
 - Fire management Option









Results

Question 1: SBB and Wildfire

- For large Fires:
 - SBB outbreaks  large fire occurrence.
 - Black spruce/ nonforest  large fire occurrence.
 - Distance from road  large fire occurrence.
 - Dryness  large fire occurrence.
 - North/ South facing aspect  large fire occurrence.

Results

Question 1: SBB and Wildfire

- For Small Fires:
 - Black spruce/ nonforest  small fire.
 - Distance from road  small fire.
 - Dryness  small fire.
 - South facing aspect  small fire.
 - Past fire  small fire.
 - Critical/Full FMO  small fire.

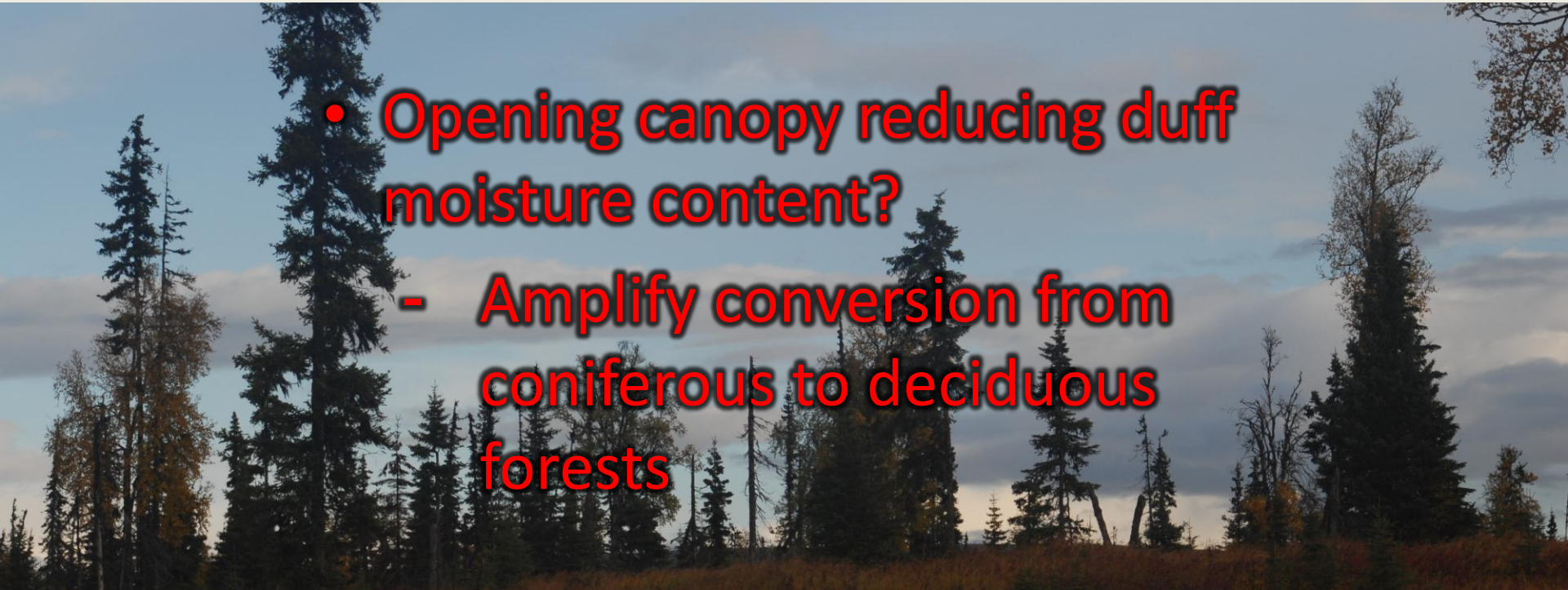
Discussion

- Successional conversion from forest to grassland?
 - Fundamental changes to ecosystem structure and function



Discussion

- Opening canopy reducing duff moisture content?
 - Amplify conversion from coniferous to deciduous forests



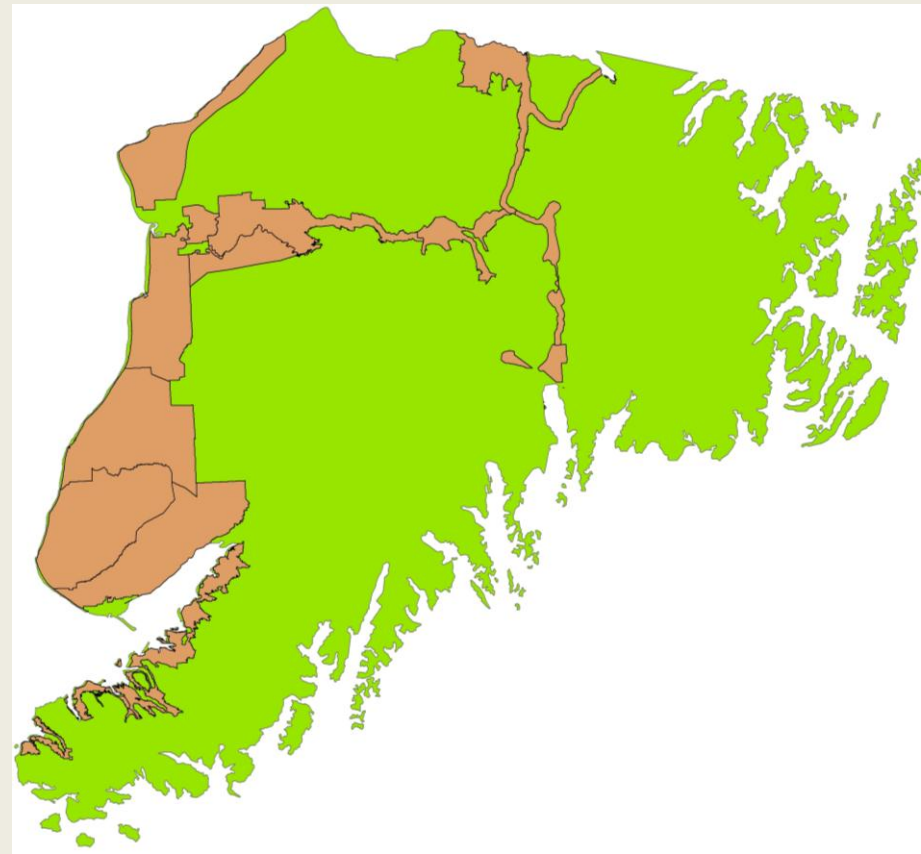
Caveats and your thoughts

- spatial processes not accounted for
 - May bias coefficient estimates
- Your feedback:
 - Important explanatory factors missing?
 - Thoughts on why SBB outbreak influence wildfire occurrence?

Study Site

Question 2: Disturbance and Property Value

- Homes in the WUI
- Excluded incorporated City Limits
 - Properties:
 - House
 - Bathroom
 - One floor
 - Consistent records (2001-2010)



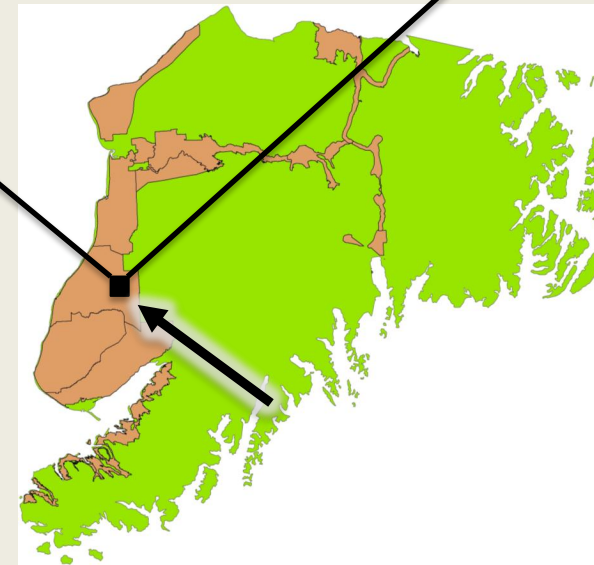
Methods

Question 2: Disturbance and Property Value

- Datasets
 - **Property Values:** Kenai Peninsula Borough
 - **Fire:** Alaska Fire Services Large Fire Database fire perimeters and fire locations database.
 - **SBB outbreaks:** US Forest Services Alaska Forest Health Survey.
 - **Vegetation:** National Land Cover Database 2001
 - **Climate:** SNAP downscaled gridded climate data.
 - Variety of other data sources.

Analysis

- Assessed Property value 2001 to 2010:
 - 1990's SBB outbreak
 - Recent past fire (1990-2009)
 - Percent forested
 - Home Characteristics
 - Neighborhood Characteristics
 - Climate



Results

Question 2: Disturbance and Property Values

- SBB outbreak (<1km) ↑ property values.
- Large Fires (<0.5km) ↑ property values.
- Percent forested ↓ property values.

Discussion



Discussion



Implications

- The benefits of natural disturbance outweigh the bads.
 - Continued increase of WUI.
 - Challenging wildfire, human conflicts.
 - How do we continue managing wildfire to:
 - Maintain ecological benefits?
 - Protect homes and people?

Future Directions

- Spring Workshop:
managing Kenai in the face
of change.
- Are workshops useful?
- What themes would be
helpful?
- What activities?



<http://templeuabroad.wordpress.com/2012/04/page/2/>

Thanks

Questions and Feedback

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